

## REMARKS

With this amendment Applicant has amended claims 1-4 for clarity and corrected typographical errors in the specification. Dependent claims 5-19 have been added to recite aspects of Applicant's invention with additional specificity. No new matter has been added by way of the amendments to the claims and the specification or by new claims 5-19. Accordingly, entry of the foregoing amendments to the claims and the specification is respectfully requested.

In the January 6, 2006 office action, the Examiner:

- objected to claims 1 and 3 for containing certain informalities;
- rejected claim 1 as being unpatentable over United States Patent No. 6,297,506 B1 to Young *et al.* (hereinafter "Young") in view of United States Patent No. 5,937,202 (hereinafter "Crosetto"); and
- rejected claims 2-4 as being unpatentable over Crosetto and Young and further in view of United States Patent No. 4,823,016 to Yamashita (hereinafter "Yamashita").

### THE CLAIM OBJECTIONS SHOULD BE WITHDRAWN

The Examiner has objected to claims 1 and 3 for certain informalities. Applicant would like to thank the Examiner for identifying these informalities. With the amendment, Applicant has amended claims 1 and 3 as requested by the Examiner. Accordingly, Applicant requests that the objection to claims 1 and 3 be withdrawn.

### THE 35 U.S.C. § 103 REJECTION OF CLAIM 1 SHOULD BE WITHDRAWN

The Examiner has rejected claim 1 as being unpatentable over Young in view of Crosetto. Claim 1 recites a detector crystal having a plurality of slits, each slit being approximately equivalent in length as each other slit and said plurality of slits being oriented parallel to the optical axis of said at least some of said plurality of transducers. The Examiner notes that Crosetto does not disclose such a detector crystal. Accordingly, the Examiner relies on Young for teaching such disclosure. Applicant traverses the rejection because Young, in fact, does not teach the claimed detector crystal.

As further described on page 37, lines 15-27, and Figure 3B of Applicant's specification, the claimed detector crystal has slits of equal length. Importantly, as illustrated in Figure 3B, these are slits in a *single* crystal. In complete contrast, crystals 22' and 22" of Young Fig. 3 are not single crystals but in fact are an array of crystals. Crystal arrays 22' and 22" of Young Fig. 3 are described on column 5, line 51, through column 6, line 3. It is clear from this description that Young refers to crystals 22' and 22" as being any member of a respective array of crystals 22' and 22". For instance, column 6, lines 1-3, of Young states "[a]s shown in FIG. 3, the scintillating crystals 22' and 22" are arranged in an array having a selected number of rows and columns." Furthermore, column 6, lines 19-21, of Young states that "[i]n the embodiment presented in FIG. 3, each photomultiplier tube 24 can service a number of scintillating crystals 22' and 22"." Moreover, claim 25 of Young recites "first scintillating crystals within said plurality of detectors for receiving gamma rays during tomography, said first scintillating crystals generating light upon receiving a gamma ray, with each of said first scintillating crystals having a decay constant, and wherein said first scintillating crystals are arranged in an array having a selected number of rows and columns with said plurality of detectors." Claim 25 of Young has a similar claim limitation for the second scintillating crystals (*i.e.*, scintillating crystals 22" of Fig. 3). Thus, Young does not teach or suggest "at least one detector crystal optically coupled to at least some of said plurality of transducers, wherein a single detector crystal in said at least one detector crystal has a plurality of slits, each slit being approximately equivalent in length as each other slit and said plurality of slits being oriented parallel to the optical axis of said at least some of said plurality of transducers" as recited in Applicant's claim 1.

The crystal design taught by Young also does not render Applicant's claimed crystal design obvious. Applicant claims the use of a single crystal having slits of equal length as illustrated, for example, in Fig. 3B of the specification. On page 37, lines 15-27, of the specification, Applicant discloses that such slits of equal length allow the sharing of light with adjacent PMTs (transducers) in all four directions with no boundaries. On page 9, lines 8-10, of the specification, Applicant discloses that the purpose of the cuts (slits) between crystals is to reduce the number of photomultipliers (transducers) affected by the light generated by an event (the interaction between an incident photon and the crystal). Young does not teach or suggest crystals having slits of equal length for the purpose of allowing adjacent PMTs (transducers) to share light.

For the above-identified reasons, Applicant respectfully requests that the 35 U.S.C. § 103 rejection of claim 1 be withdrawn.

## **THE 35 U.S.C. § 103 REJECTION OF CLAIMS 2-4 SHOULD BE WITHDRAWN**

The Examiner has rejected claims 2-4 under 35 U.S.C. § 103 in view of the combination of Crosetto, Young, and Yamashita. At the outset, claims 2-4 are patentable over the combination of Crosetto and Young for the reasons given above. The crystal in Yamashita, as in Young, is in fact a bundle of elements. See, for example, column 4, lines 18-19, which states that “[s]cintillator bundle 12 is formed by binding the scintillator elements into a bundle.” Thus, the combination of Crosetto, Young, and Yamashita does not teach or suggest a detector crystal having a plurality of slits, each slit being approximately equivalent in length as each other slit as found in Applicant’s claim 1. Claims 2-4 are thus patentable over the combination of Crosetto, Young, and Yamashita through their dependency on claim 1.

Claim 2, as amended, is patentable over the combination of Crosetto, Young, and Yamashita for the additional reason that the combination of references do not teach or suggest the claimed feature of a surface area of a face of a transducer in the second plurality of transducers being smaller than a surface area of a face of a transducer in the first plurality of transducers. This feature is illustrated, for example, in Applicant’s Fig. 10 where interior sensor 1014 has a face with a surface area that is smaller than the surface area of a face of exterior sensor 1004. Compare Applicant’s Fig. 10 to Fig. 1 of Yamashita.

With respect to claim 3, the Examiner claims that the use of a light guide is well known and would have been an obvious design choice. Applicant respectfully points out that such an argument does not satisfy the patent office’s burden of providing a prima facie case of obviousness. In fact, a light guide is used in some embodiments of Applicant’s invention because the surface area of a face of a transducer in the second plurality of transducers is less than the surface area of a face of a transducer in the first plurality of transducers, as illustrated in Applicant’s Figure 10, where element 1016 is the light guide. Crosetto, Young, and Yamashita do not teach or suggest transducers having faces with unequal surfaces areas. Thus, these references provide no motivation whatsoever to use a light guide.

For the above-identified reasons, Applicant respectfully requests that the 35 U.S.C. § 103 rejection of claims 2-4 be withdrawn.

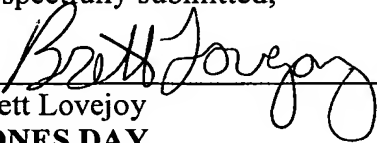
### CONCLUSION

Applicants respectfully request that the above-mentioned amendments and remarks be entered and made of record in the file history of the subject application. It is believed that all claims are fully allowable and early indication of the same is earnestly sought.

It is believed that no fees are due in connection with the filing of this amendment, other than extension fees. However, should the United States Patent and Trademark Office determine otherwise, please charge the required fee to Jones Day deposit account no. 50-3013, referencing CAM No. 510974-600005.

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